

Kennecott  
10 East South Temple  
P.O. Box 11248  
Salt Lake City, Utah 84147

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DIVISION OF  
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April 28, 1986

**Kennecott**

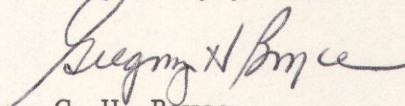
Mr. Lowell P. Braxton  
Administrator  
Mineral Resource Development  
and Reclamation Program  
Division of Oil, Gas and Mining  
Utah Department of Natural Resources  
365 West North Temple  
Three Triad Center, Suite 350  
Salt Lake City, Utah 84180

SUBJECT: Utah Copper Division Modernization Project - Phase II

Dear Mr. Braxton:

Enclosed for your review and approval is the permit application package for Phase II of the Utah Copper Division Modernization Project. Please contact Mr. Al Trbovich (801/322-8263) as soon as possible if you require additional information or clarification to complete the Phase II permitting.

Very truly yours,



G. H. Boyce  
Director  
Environmental Affairs

/mf  
Enclosures

cc: V. R. Rao, w/enc.  
S. D. Taylor, w/enc.  
A. M. Trbovich, w/enc.  
J. B. Winter, w/enc.

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Permit Application Package  
Utah Copper Division Modernization Project  
Phase II - Grinding Plant, Ore Conveyor and Flotation  
Feed Pipeline

Introduction and General Information

On December 2, 1985, Kennecott applied to the Utah Division of Oil, Gas and Mining (DOGM) for amendment of our existing mining and reclamation plan for the Utah Copper Division operation. The proposed changes reflect Kennecott's plans to modernize the Utah facilities by installing inpit crushing, conveying of crushed ore to a new grinding plant approximately one mile north of Copperton, the grinding plant, a pipeline to transport the ground ore (flotation feed) to the existing Arthur and Magna flotation facilities and a second pipeline to return process water to the grinding plant.

In order to expedite the permitting process, DOGM split the project into two phases. Phase I, which has been permitted, consists of grading the grinding plant area and construction of an access road into the grinding plant site. Phase II consists of constructing the process facilities described above. Since December 2, 1985, several submittals containing information about the Phase II plans have been given to DOGM. This document represents a consolidation of the previously submitted information and the initial presentation of additionally required information. The purpose is to provide an easily readable presentation of Kennecott's Phase II plans.

Several portions of the modernized facilities are located on property currently permitted under Kennecott's existing Mining and Reclamation Plan. These facilities, including the inpit crusher, a portion of the ore conveyor and a portion of the pipeline corridor, do not require repermitting and will not be discussed in detail in this document.

Site Location and Conditions

The Utah Copper Division grinding plant will be located in the SW $\frac{1}{4}$  of Section 5 and the SE $\frac{1}{4}$  of Section 6, T3S, R2W, SLBM. The ore conveyor will traverse portions of Sections 6, 7, and 18, T3S, R2W, SLBM. The pipeline corridor will traverse portions of Sections 5 and 6, T3S, R2W; Sections 6, 7, 8, 16, 17, 21, 28, 29, and 32, T2S, R2W; and Section 31, T1S, R2W, SLBM. Drawing 712-C-120 (Concentrator Site, Mass Earthwork Schematic, enclosed) defines the grinding plant area to be disturbed. Drawing 712-C-101 (Concentrator Site Plan, enclosed) locates the grinding plant facilities, Drawing 712-SKC-3-152 (Drainage Report Area Plan, enclosed) defines the ore conveyor and pipeline corridors. Each corridor is 200 feet wide. The ore

conveyor corridor is 6,350 feet in length from the crossing over State Highway 48 in Copperton to the southern edge of the grinding plant site. Additional detail about the conveyor corridor is provided on Drawings D-12-MH-608, D-12-MH-609, D-12-MH-610 (Conveying System Plan and Profile). The pipeline corridor, including the areas of common pipeline corridor and single pipeline corridor is 86,000 in length from the northern edge of the grinding plant site to the point of entrance on to currently permitted property. The total area of the grinding plant site is 163 acres. The ore conveyor corridor covers 30 acres. The pipeline corridor covers 395 acres. The entire area is owned by Kennecott.

Soil Conservation Service survey maps (Figures 1-4) which delineate the grinding plant site and the corridors are enclosed. Detailed geotechnical information is included in the previously submitted Final Geotechnical Investigations Report, Volumes I and II, and will not be repeated here. Additional information is provided in the enclosed report "Geotechnical Investigation Report, Conveyor Line Corridor".

The area to be disturbed currently consists of undeveloped land used for agricultural purposes or not in use. In places, the pipeline corridor is located along a right-of-way previously used for a mining railroad. Other portions of the pipeline corridor pass through Kennecott property leased to Hercules and currently used for aerospace manufacturing. Kennecott and Hercules have coordinated the land use to permit a joint presence. There are no existing structures on the site, including no previously active or inactive, surface or underground mined areas. Miscellaneous debris gathered during construction will be removed to the Salt Lake County Trans-Jordan landfill near Lark.

During construction, warning signs will be posted at all natural ingress points to the site to prevent public access. After construction is completed, the grinding plant site and the ore conveyor corridor will be fenced. Warning signs will be posted every 500 feet and at all natural ingress points. The signs will be approximately 10 inches by 20 inches and will say "Kennecott Property, No Trespassing, Violators will be Prosecuted".

Vehicle access over the flotation feed pipeline will be provided at several locations (Drawing 410-SKC-107, Flotation Feed Pipeline Plan with Pipeline Crossings). Wildlife access will be provided at several additional locations. These additional locations were determined in consultation with the Utah Division of Wildlife Resources (DWR). The wildlife access will be soil embankments installed to permit wildlife to walk over the pipeline. The precise location of the wildlife accesses will be determined during construction after site inspection and review with DWR. If, at some future date, wildlife migration and control dictates an access change, additional wildlife ramps will be constructed.



### New Facility Description

The new facilities being constructed within the modernization scope include one inpit movable crusher, approximately five (5) miles of seventy two (72) inch wide ore conveyor, an ore grinding plant, a flotation feed pipeline and a return water pipeline. The grinding plant will include three (3) independent grinding lines consisting of one semiautogenous (SAG) mill and two (2) ball mills each. Ore will be crushed in the pit and conveyed to a stockpile at the grinding plant. Ore will be reclaimed from beneath the pile and conveyed to the grinding circuits. The ground ore will be gravity slurried, via pipeline, to the existing concentrators for additional processing. The existing tailings pond will continue in use. Water will be recycled from the tailings pond to the grinding plant for reuse.

Additional detail regarding the process was provided in our submission of December 2, 1985, and will not be repeated here.

### Other Permitting Agencies

The Utah Bureau of Air Quality (BAQ) is responsible for reviewing all aspects of the modernization project for potential air quality impacts. Kennecott is installing the necessary emission controls to meet the applicable New Source Performance Standards (NSPS) and Best Available Control Technology (BACT) provisions. Mr. Don Robinson of BAQ is this agency's contact for the modernization project. The information submitted to BAQ for review and approval will not be repeated here.

The Utah Bureau of Water Pollution Control (BWPC) is responsible for reviewing all aspects of the modernization project for potential surface and groundwater quality impacts. Kennecott is installing the necessary controls to assure that there is not adverse water quality impact from the modernized facilities. Mr. Byran Elwell of BWPC is this agency's contact for the modernization project. The information submitted to BWPC for review and approval will not be repeated here.

The Salt Lake County Flood Control Division is responsible for reviewing all aspects of the modernization project for potential impacts to surface drainage patterns. Kennecott is installing the necessary control equipment to assure proper drainage of precipitation. Several bonds totalling \$1,066,762 have been posted with the County as security for proper construction. Mr. Cade Lockwood of the Development Service Division is the County's contact for the modernization project. The information submitted to the County for review and approval will not be repeated here.

### Final Reclamation Plan

The final reclamation plan involves returning the area to native vegetation or the equivalent. Following permanent closure of



the Kennecott facilities, usable equipment will be salvaged and sold. The time necessary to complete this process is very difficult to forecast because of the highly variable used equipment market. Two (2) years is estimated. Following sale of salvageable equipment, the surface structures will be razed. Whenever possible, salvageable material will be sold as scrap for recycle. Otherwise, the material and debris will be removed to an approved solid waste landfill. This step is expected to require two (2) years. After razing, foundations will be broken apart, removed and/or buried. Parking and driving surfaces will be broken up and buried. The area will then be regraded and compacted areas will be ripped to twelve (12) inches. This step is expected to require one (1) year. During the first October following the completion of regrading the area will be replanted.

Kennecott will not store any first horizon soil for final reclamation use. Instead, following construction, Kennecott will establish a test program to determine techniques for best reclaiming the second horizon soil to a vegetative support level equivalent to the nearby undeveloped areas. The information collected by the test program will be used along with other appropriate input, to determine the detailed final reclamation procedures following permanent closure.

A few facilities will remain after final reclamation. The two (2) pipelines will remain in place for use in diverting area surface flows from the populated areas east of the site. The pipeline and conveyor service roads will remain in place to permit pipeline access.

A schedule estimating the final reclamation cost is included in Table 1. Detail about the reclamation cost is provided in Tables 2-5. A bond will be posted with DOGM for the reclamation cost. Area which is disturbed during construction, reclaimed under the post-construction reclamation plan and not further disturbed during operations is not included in the final reclamation plan. This area is principally the embankments along the ore conveyor corridor.

#### Post Construction Reclamation

A volume of 14,000 cubic yards of upper horizon soil will be removed from the plant site and stored for post-construction reclamation. The soil will be scraped from the site after grubbing and clearing has occurred and will be stored in a stockpile east of the site (see Drawing 712-C-120). Precipitation runoff will be directed around the stockpile and a silt control fence will be constructed to prevent the escape of fine particulate matter from the stockpile. The soil will be stored from one (1) to three (3) years, as a function of the area to be revegetated and the construction schedule.

Upon completion of construction, the stored soil will be placed on the remaining exposed ground (i.e., road embankments, plant site slopes.) A one (1) foot layer will be placed. Some of the steeper embankments may receive less than one (1) foot of soil, if stability is limited. Soil placement will occur in September and early October, followed by fertilized planting in late October. The post-construction seed mixture is given in Table 6.

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TABLE 1  
SITE RECLAMATION ESTIMATE FOR BOND ESTIMATING  
PHASE II

<u>Item</u>	
Demolish and Dismantle Structures (See Table 2 for data)	\$3,770,000
Load and Ship Materials (See Table 3 for detail)	\$1,584,000
Prepare and Plant Site (see Table 4 for detail)	\$ 85,044
Subtotal	\$5,439,044
Contingency (10%)	\$ 543,904
Total	\$5,982,948

Note: Total does not include \$1,450,000 credit for salvage value.



TABLE 2  
DEMOLITION AND DISMANTLING ESTIMATE FOR BOND ESTIMATING  
PHASE II

<u>Item</u>	<u>Quality</u>	<u>Manhours</u>	<u>Cost</u>
Earthwork	95,000 cy	-	\$ 455,000
Concrete	4,310 cy	14,140	\$ 282,800
Steel	7,075 st	26,245	\$ 524,900
Building Finish	1 lot	13,750	\$ 275,000
Tanks	1,167 st	10,600	\$ 212,000
Plant Equipment	9,380 st	48,050	\$ 961,000
Piping	476 st	23,400	\$ 468,000
Electrical Equipment	1 lot	6,550	\$ 131,000
Recovery	1 lot	18,000	\$ 360,000
Wiring and Cable	348,130 lf	5,000	\$ 100,000
Total	-	165,735	\$3,769,700

TABLE 3  
LOADING AND SHIPPING MATERIALS ESTIMATE FOR BOND ESTIMATING  
PHASE II

<u>Item</u>	<u>Quantity</u>	<u>Manhours</u>	<u>Cost</u>
Load to Dump	-	4,000	\$ 80,000
Transport to Dump	1,600 st	-	\$ 48,000
Load Salvage	-	9,100	\$ 182,000
Transport Salvage	18,200 st	-	\$1,274,000
Total			\$1,584,000

TABLE 4  
SITE RECLAMATION ESTIMATE FOR BOND ESTIMATING  
PHASE II

<u>Item</u>	<u>Cost/Acre</u>		<u>Cost</u>
Final Site Preparation (Dozer) \$800/day x 1 day/20 acres	\$ 40.00	X168 acres	\$ 6,720
Seed Mix (Drill) 19.0 PLS/acre x 15.84/PLS	\$301.00	X160 acres	\$48,160
Seed Mix (Broadcast) 38.0 PLS/acre x 15.84/PLS	\$602.00	X8 acres	\$ 4,816
Fertilizer 250 pounds/acre x \$0.1152/pound	\$ 28.00	X168 acres	\$ 4,704
Mulch 2000 lbs/acre x \$50/ton	\$ 50.00	X168 acres	\$ 8,400
Equipment Rental (Tractor & Drill) \$300/day x 1 day/20 acres	\$ 15.00	X160 acres	\$ 2,400
Fuel	\$ 0.50	X160 acres	\$ 80
Equipment Service and Maintenance	\$ 1.90	X160 acres	\$ 304
General Manpower \$50/day x 1 day/20 acres	\$ 7.50	X168 acres	\$ 1,260
Equipment Operator, Dozer \$148.10/day x 8.40 days			\$ 5,924
Equipment Operator, tractor \$148.10/day x 8.00 days			\$ 1,185
Broadcast Seeding Manpower \$22.80/hour x 4 hours			\$ 91
Miscellaneous	\$ 5.95	X168 acres	\$ 1,000
Total			\$85,044

NOTE: The seed mix to be used in final reclamation is to be determined by future studies. The seed mix used for this calculation is given in Table 5.



TABLE 5  
SEED MIX FOR RECLAMATION ESTIMATE  
PHASE II

<u>Species</u>	Rate* (lbs./acre)
<u>Grasses</u>	
<u>Agropyron dasystachyum</u> (thickspike wheatgrass)	2.0
<u>Agropyron intermedium</u> (intermediate wheatgrass)	2.0
<u>Agropyron smithii</u> (western wheatgrass)	2.0
<u>Agropyron trachycaulum</u> (slender wheatgrass)	1.5
<u>Elymus cinereus</u> (Great Basin wildrye)	2.0
<u>Oryzopsis hymenoides</u> (indian ricegrass)	1.0
<u>Forbs</u>	
<u>Achillea millefolium</u> (yarrow)	.1
<u>Aster Chilensis</u> (Pacific aster)	.1
<u>Helianthus annuus</u> (sunflower)	1.0
<u>Linum lewisii</u> (Lewis flax)	.5
<u>Medicago sativa</u> ('Ranger' alfalfa)	1.0
<u>Melilotus officinalis</u> (yellow sweetclover)	1.0
<u>Penstemon strictus</u> (Rocky Mountain penstemon)	.2
<u>Shrubs</u>	
<u>Amelanchier alnifolia</u> (serviceberry)	2.0
<u>Artemisia tridentate</u> ssp. <u>vaseyana</u> ('Hobble Cr.' mountain big sagebrush)	.1
<u>Cercocarpus montanus</u> (true-leaf mtn. mahogany)	2.0
<u>Chrysothamnus nauseosus</u> (rubber rabbitbrush)	.5

Total Seed

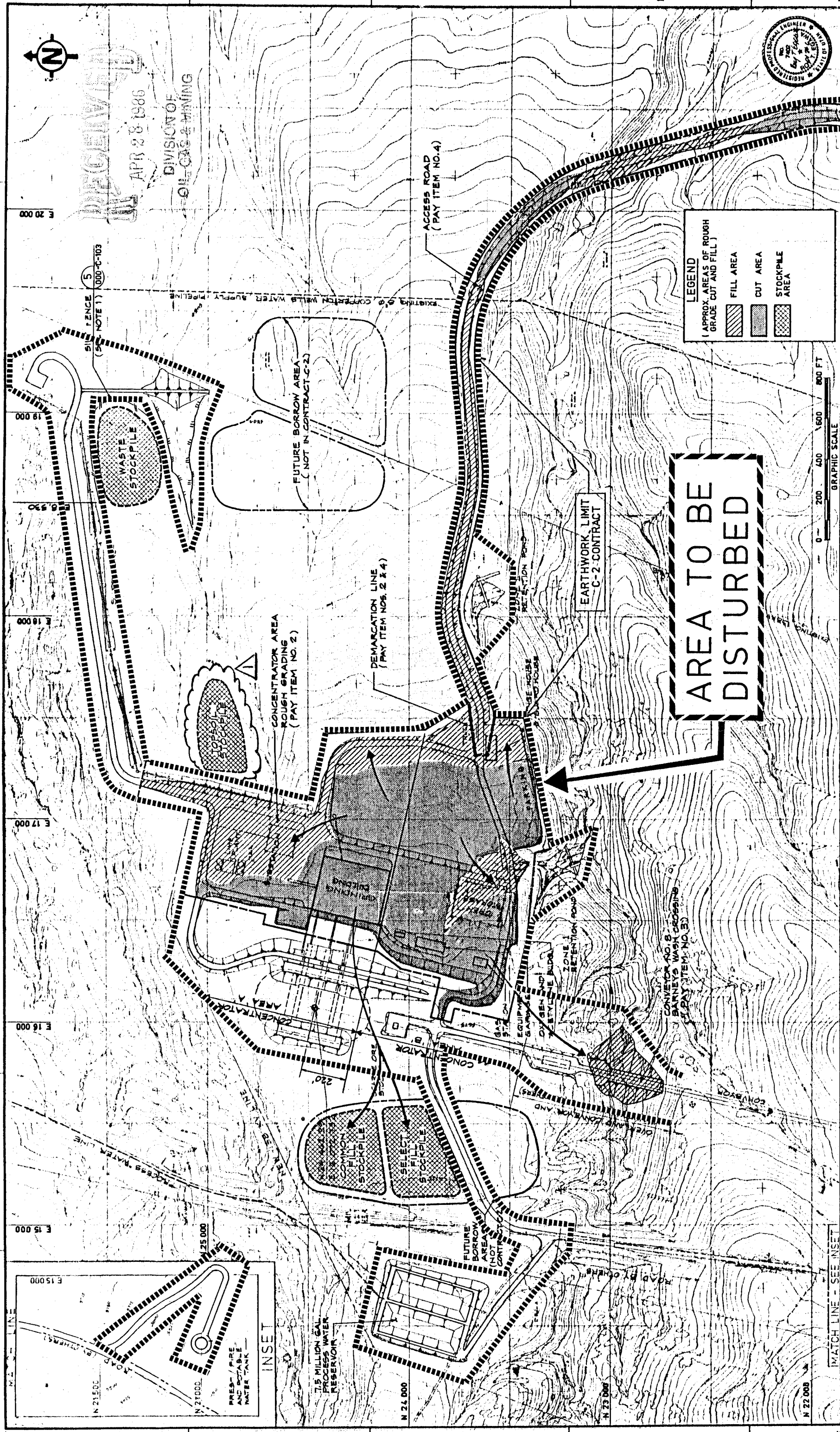
\*Rate is in terms of Pure Live Seed (PLS) for drill seeding only.  
The rate for broadcast seeding is double the drill rate.

After seeding, 2000-2500 lbs./acre of alfalfa hay mulch will be spread of the entire area and crimped into the soil with a mulch crimper.

TABLE 6  
POST-CONSTRUCTION SEED MIXTURE

<u>Species</u>	<u>Quantity (PlS Lb/Acre)</u>
Thick Spike Wheat Grass	0.75
Tall Wheat Grass	2.0
Intermediate Wheat Grass	4.0
Streambank Wheat Grass	1.0
Siberian Wheat Grass	1.75
Western Wheat Grass	0.5
Slend Wheat Grass	3.0
Pubescent Wheat Grass	5.0
Sheep Fescue	0.5
Range Alfalfa	2.0
Sweet Yellow Clover	2.0
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Total Seed	22.5

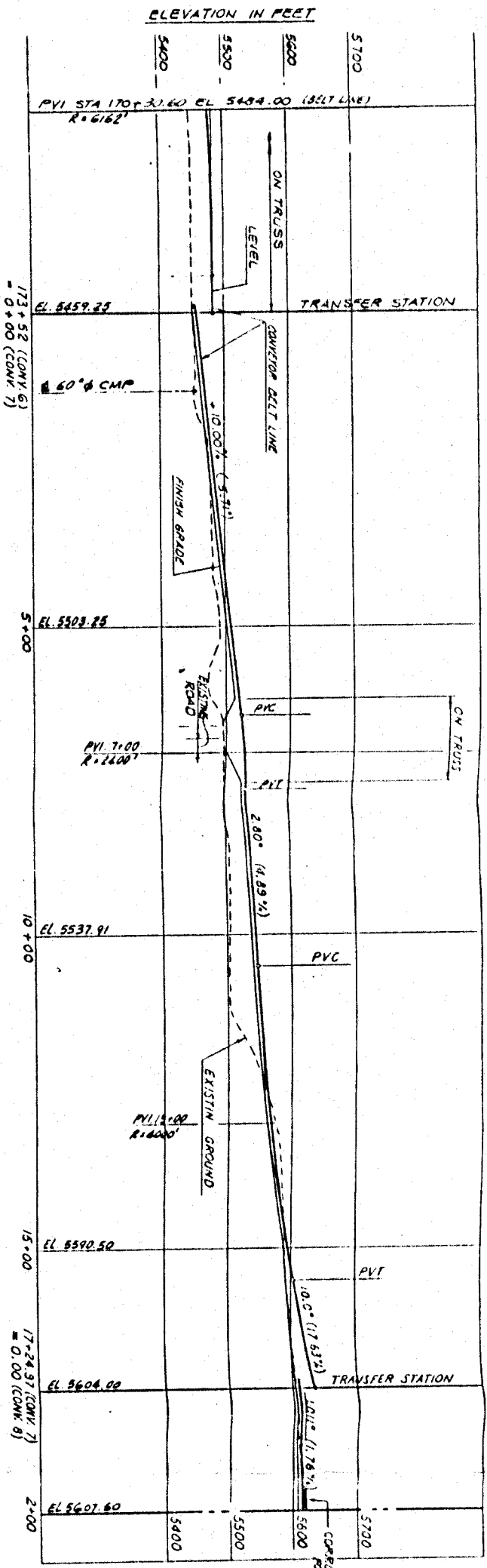
A 16-16-8 fertilizer will be applied at a rate of 250 pounds per acre. Depending upon terrain at specific locations, fertilizer will be applied by a spreader pulled by a tractor or will be broadcast by hand. Organic matter or mulch will not be applied. The agronomic procedure will include tilling and drill seeding, to be performed by a snowcat pulling a tilling/seeding machine. Depth of tilling will be three inches. Broadcast seeding by hand will be performed on steeper slopes. Any contaminated material (i.e., soil contaminated with oil) will be removed to an approved solid waste landfill.



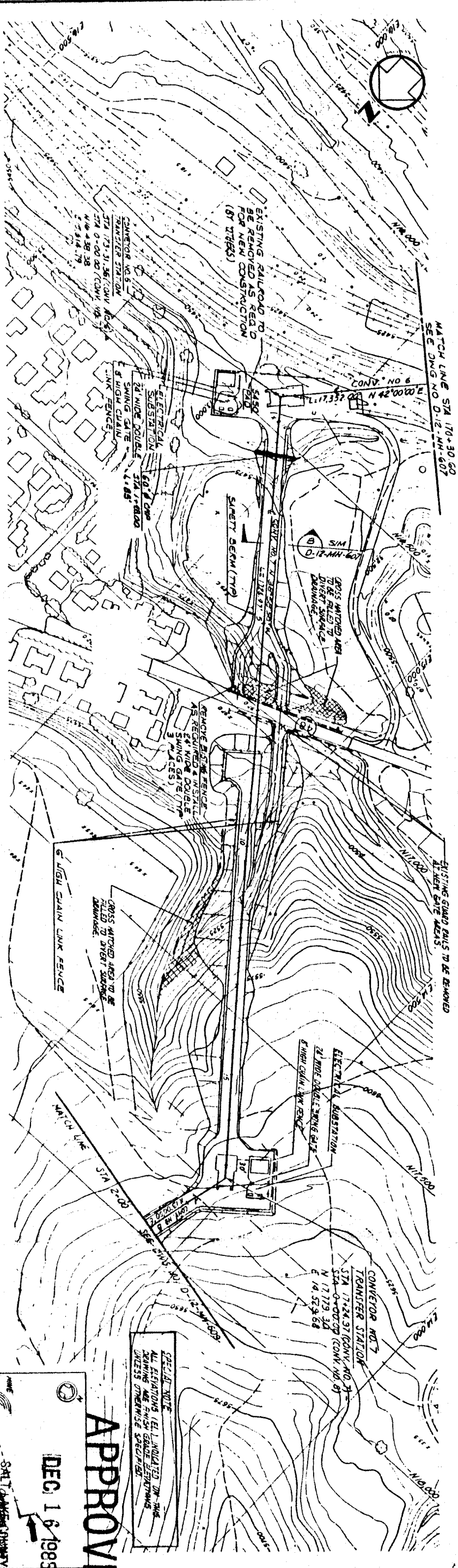
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247	2-11-86			249	
248	2-11-86			250	



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PROFILE  
SCALE 1"=100'



PLAN  
SCALE 1"=100'

APPROVED  
DEC 16 1985  
SALT DAMS COMPANY  
DEVELOPMENT ENGINEERING

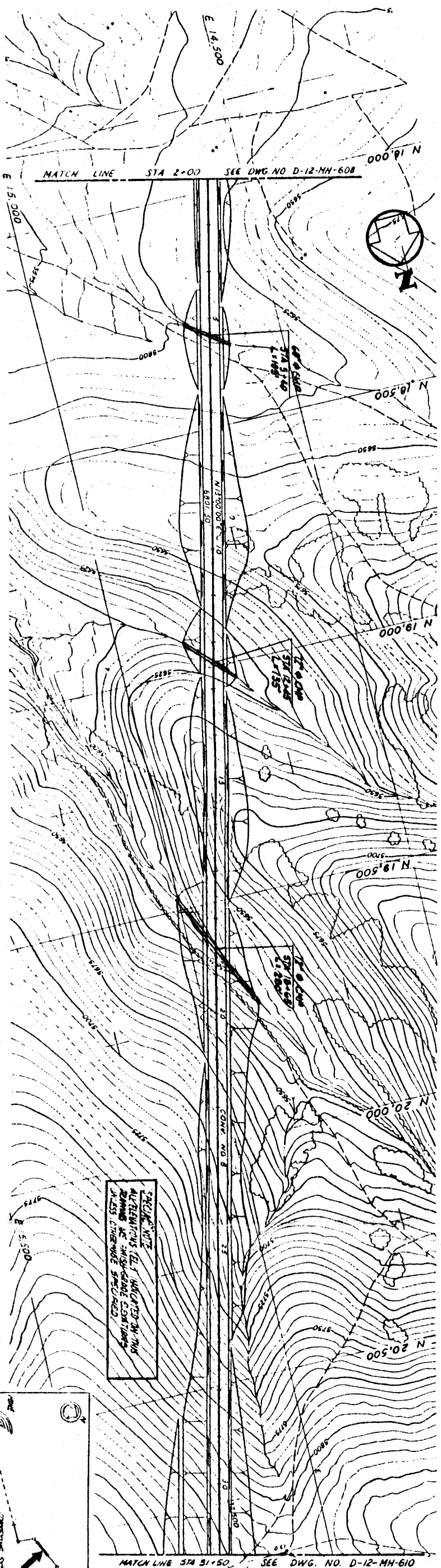
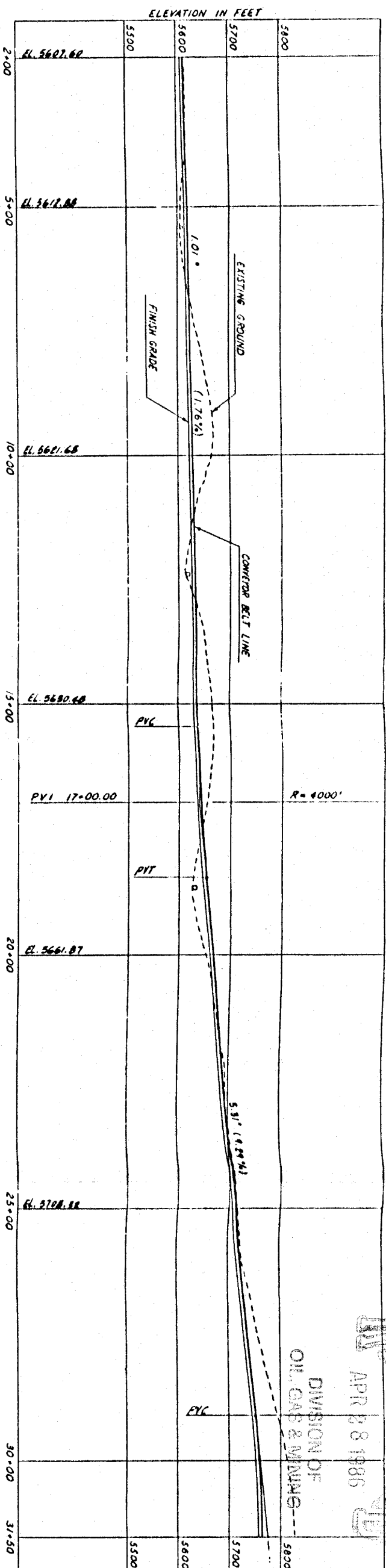
PARSONS  
PASADENA, CALIFORNIA

KENNECOTT

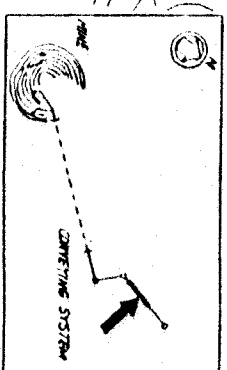
UCD MINE MODERNIZATION  
CONVEYING SYSTEM  
PLAN AND PROFILE

1. CONVEYOR CENTER AND CONVEYOR DELT AS SHOWN ARE APPROXIMATE. CONVEYOR CENTER SHALL BE DETERMINED BY FIELD SURVEY.

NO.	DATE	REVISION	BY	CHKD.	DESCRIPTION
1	12/16/85				UCD MINE MODERNIZATION CONVEYING SYSTEM PLAN AND PROFILE
2	12/16/85				UCD MINE MODERNIZATION CONVEYING SYSTEM PLAN AND PROFILE
3	12/16/85				UCD MINE MODERNIZATION CONVEYING SYSTEM PLAN AND PROFILE
4	12/16/85				UCD MINE MODERNIZATION CONVEYING SYSTEM PLAN AND PROFILE
5	12/16/85				UCD MINE MODERNIZATION CONVEYING SYSTEM PLAN AND PROFILE
6	12/16/85				UCD MINE MODERNIZATION CONVEYING SYSTEM PLAN AND PROFILE
7	12/16/85				UCD MINE MODERNIZATION CONVEYING SYSTEM PLAN AND PROFILE
8	12/16/85				UCD MINE MODERNIZATION CONVEYING SYSTEM PLAN AND PROFILE
9	12/16/85				UCD MINE MODERNIZATION CONVEYING SYSTEM PLAN AND PROFILE
10	12/16/85				UCD MINE MODERNIZATION CONVEYING SYSTEM PLAN AND PROFILE



KEY PLAN



CONVERT CENTER AND CONCRETE ROAD AS SHOWN ON APPROXIMATE  
CONVERT CENTER SMALL SPECIFIC

PERSONS  
PASADENA CALIFORNIA

KENNECOTT

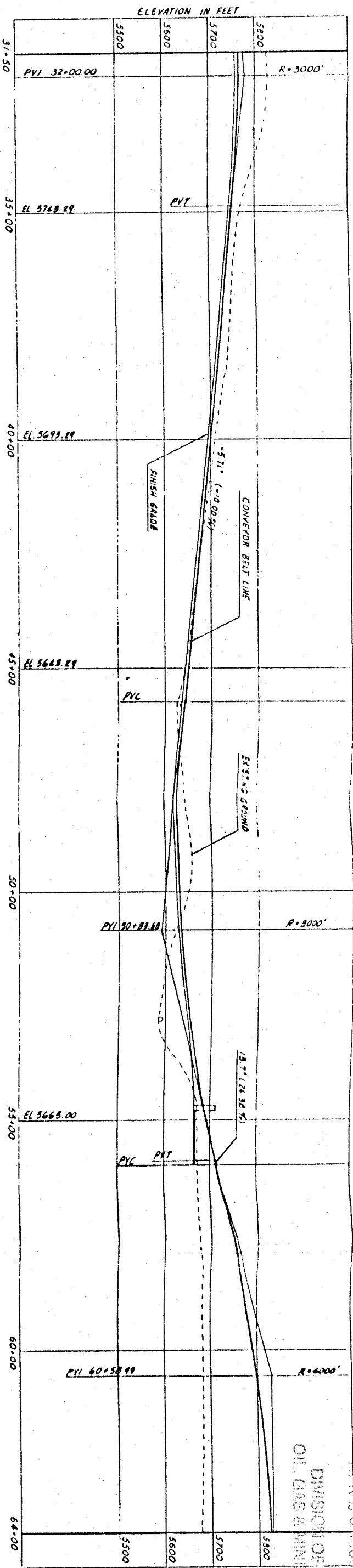
UCD MINE MODERNIZATION

STA 2+00 TO STA 31+50  
ELEVATION 5700 TO 5800  
ELEVATION 5700 TO 5800

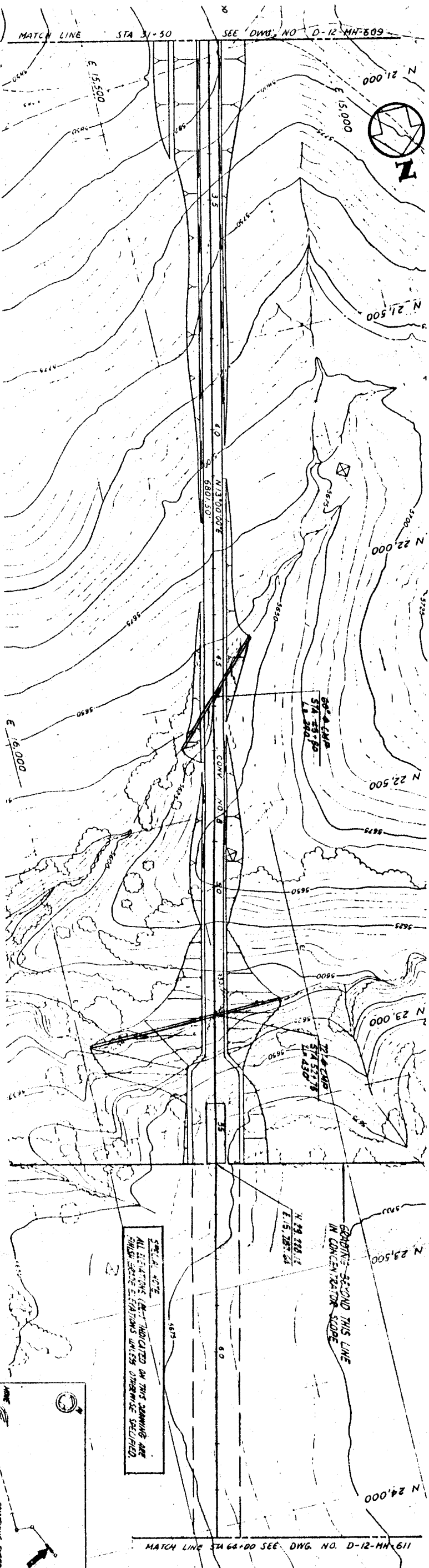
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RECEIVED



PROFILE  
SCALE 1"=100'



CONVEYOR BELT LINE AND FINISH GRADE SHOWN ARE APPROXIMATE.  
CONVEYOR BELT LINE SCALE SPECIFIC.

ARSONS

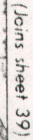
PASADENA, CALIFORNIA

KENNECOTT

DIVISION OF  
OIL, GAS & MINING

APR 28 1985







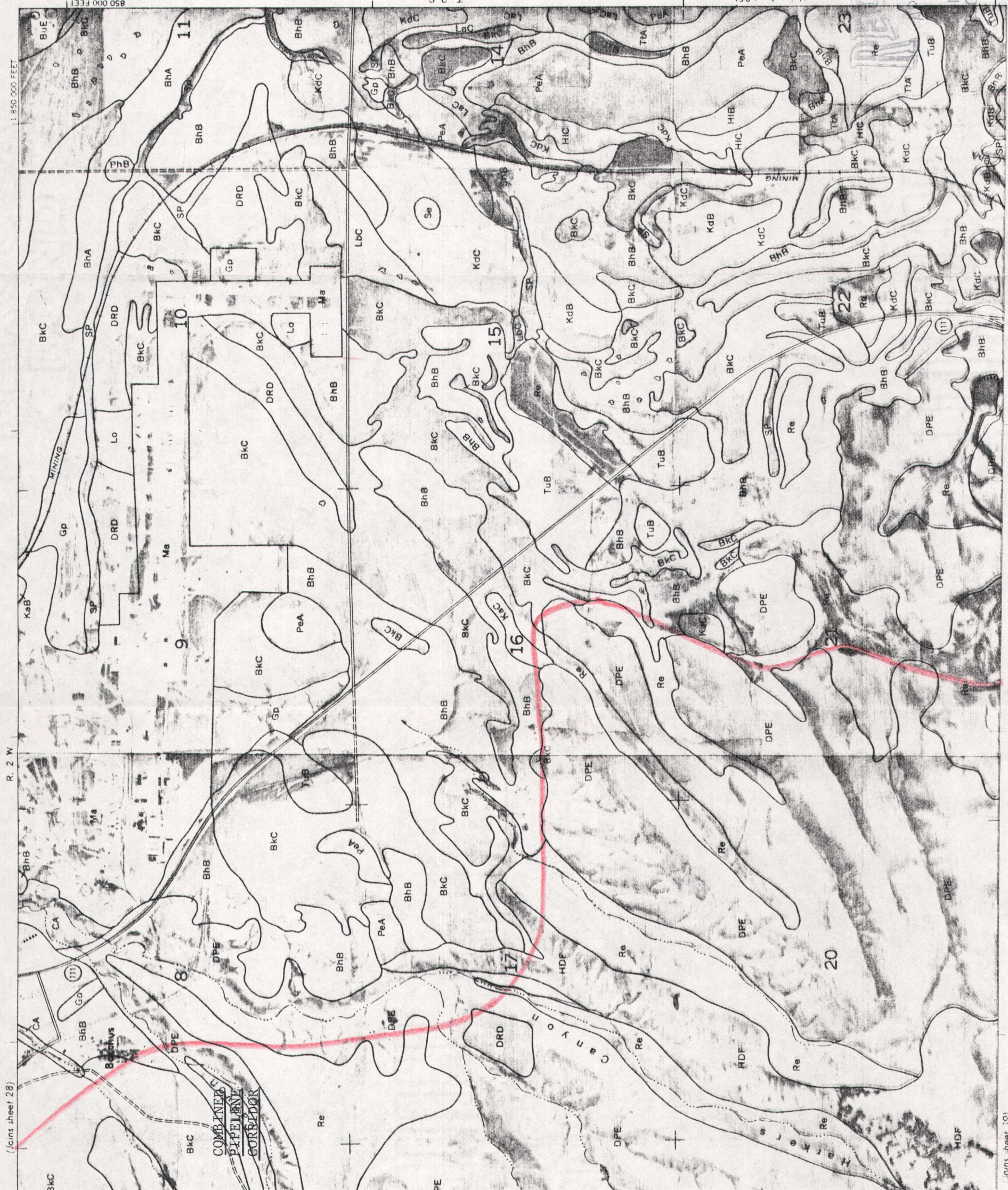
Photobase from 1963 aerial photography. Positions of 5,000-foot grid ticks are approximate and based on the Utah coordinate system, central zone. This map is one of a set compiled in 1971 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Utah Agricultural Experiment Station.

Photobase from 1963 aerial photography. Positions of 5,000-foot grid ticks are approximate and based on the Utah coordinate system, central zone. This map is one of a set compiled in 1971 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Utah Agricultural Experiment Station.

Land division corners are approximately positioned on this map.







Joins sheet 391



